

CLAIMS

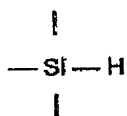
1. Method of forming a three-dimensional microstructure on a flat surface of a support, characterized in that it comprises the application of a first flat and uniform layer of silicone on said surface of support and the application on the first layer of silicone of a second three dimensionally microstructured layer of silicone, said first layer and second layer of silicone become integrally connected to thus form a common three-dimensional microstructure ensuring anti-adhesive properties distributed regularly on the surface of the support, so that any flexible surface of substrate, in particular a surface of adhesive deposited on said layers of silicone will be microstructured by inverse replication of the three-dimensional microstructure formed by the two layers of silicone, where said layers of silicone are fixed by hardening by heating or by exposure to an ultraviolet or electronic radiation, or a combination thereof.
2. Method for the three-dimensional microstructuring of a flexible surface of substrate, in particular a surface of adhesive, characterized in that it comprises the application of a first flat and uniform layer of silicone on a surface of a support, the application on the first layer of silicone of a second three dimensionally microstructured layer of silicone, where said first layer of silicone and second layer of silicone become integrally connected to thus form a common three-dimensional microstructure ensuring anti-adhesive properties distributed regularly on the surface of the support, and the deposition of the flexible surface of substrate, in particular of the surface of adhesive on said layers of silicone so that said flexible surface of substrate, in particular of adhesive, is microstructured by inverse replication of the common three-dimensional microstructure formed by the first layer of silicone and the second layer of silicone, where said layers of

silicone are fixed by hardening by heating or by exposure to an ultraviolet or electronic radiation, or a combination thereof.

3. Method according to either one of claims 1 and 2, characterized in that the three-dimensional microstructure formed by the first layer and
5 second layer of silicone comprises micro-honeycombed motifs.

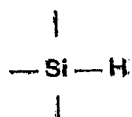
4. Method according to any one of claims 1-3, characterized in that one three dimensionally microstructures a surface of adhesive.

5. Method according to any one of claims 1-4, characterized in that the first layer of silicone comprises a functionalized polyorganosiloxane with
10 groups

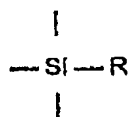


as crosslinking agent, and at least one functionalized polyorganosiloxane which can react with the crosslinking agent.

6. Method according to any one of claims 1-4, characterized in that
15 the first layer of silicone comprises a functionalized polyorganosiloxane with groups



as crosslinking agent, and at least one functionalized polyorganosiloxane with groups



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which can react with the crosslinking agent, where R comprises at least one ethylenic unsaturation.

7. Method according to either one of claims 5 and 6, characterized in that the first layer of silicone comprises a catalyst for the activation of said crosslinking reaction.

8. Method according to claim 7, characterized in that the activation catalyst is selected from the platinum, rhodium or tin based catalysts.

9. Method according to any one of claims 5-8, characterized in that the first layer of silicone comprises, in addition, one or more additives chosen from the group comprising the adhesion modulators, the reaction accelerators and inhibitors, the pigments, the surfactants and the fillers.

10. Method according to any one of claims 7-9, characterized in that the first layer of silicone is hardened by heating or by exposure to an ultraviolet radiation.

11. Method according to claim 10, characterized in that, when the layer of silicone is hardened by heating, it is heated at temperatures of 70-200°C, advantageously 100-180°C.

12. Method according to either one of claims 5 and 6, characterized in that the first layer of silicone is hardened by exposure to electronic radiation.

13. Method according to any one of claims 5-12, characterized in that the first layer of silicone has a thickness of 0.4-1.6 μm , advantageously 0.7-1.2 μm .

14. Method according to any one of claims 1-13, characterized in that said second layer of silicone comprises at least one polyorganosiloxane, advantageously a polydimethylsiloxane with acrylate

function, and a catalyst of the ketone type, advantageously of the benzophenone type, and it is hardened by exposure to ultraviolet radiation.

15 15. Method according to any one of claims 1-13, characterized in that said second layer of silicone comprises at least one polyorganosiloxane, advantageously a polydimethylsiloxane with epoxy function, and a catalyst of the iodonium salt type, and it is hardened by exposure to ultraviolet radiation.

10 16. Method according to any one of claims 1-13, characterized in that said second layer of silicone comprises at least one polyorganosiloxane, advantageously a polydimethylsiloxane with acrylate and/or epoxy function, and it is hardened by exposure to ultraviolet radiation (acrylate and/or epoxy function) or electronic radiation (acrylate function).

15 17. Method according to any one of claims 3-16, characterized in that the three-dimensional microstructure formed by said first layer of silicone and said second layer of silicone consists of microembossed motifs, whose crest height varies from 3 to 50 μm , advantageously from 5 to 25 μm .

20 18. Method according to any one of claims 1-17, characterized in that the second layer of silicone is applied to the first layer in a quantity which can range from 3 to 25 g/m^2 , advantageously from 4 to 15 g/m^2 .

25 19. Method according to any one of claims 1-18, characterized in that the first layer of silicone and the second layer of silicone have surface tensions which are close to each other, from 15 to 25 mN/m , advantageously from 21 to 23 mN/m .

20 20. Method according to any one of claims 1-19, characterized in that said substrate and support consist of paper, notably calendered or

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sized paper, a plastic film, notably made of polyethylene, polyester, polypropylene, polyvinyl chloride, polyamide.

21. Method according to any one of claims 4-20, characterized in that said adhesive is deposited on said first layer and second layer of silicone either by coating directly on said layers or by lamination.

22. Method according to claim 20, characterized in that, in the case of direct coating, the adhesive is either in liquid form, advantageously in an organic solvent or in an emulsion in water, or in a hot cast solid form.

23. Method according to any one of claims 4-22, characterized in that the adhesive is applied to a flexible plastic film, advantageously a film of polyvinyl chloride.

24. Method according to any one of claims 2-23, characterized in that during the application of said adhesive surface on any surface, the adhesive surface contact with the latter is from 15 to 32 %, preferably 23 to 28 % of the total covering surface.

25. Three dimensionally microstructured film, and/or self-adhesive film comprising a surface of adhesive such as one which is three dimensionally microstructured by the method according to any one of Claims 1-23 and comprises notably motifs for decorative, publicity or other purposes on the surface opposite the surface which is in contact with the microstructure formed by said layers of silicone.

26. A multilayer sheet comprising:

(a) a flexible support comprising:

(i) a sheetlike structure having a first broad surface and opposing second broad surface;

(ii) a first layer of a silicone containing material in a sheetlike coating that is fixed to at least said first broad surface of said aforementioned sheetlike structure;

(iii) a second layer of a silicone containing material fixed to said first
5 layer (ii) as a plurality of ridges thereby providing a flexible support having on at least one broad surface thereof a three dimensional topography of a plurality of ridges; and

(b) a flexible substrate having a proximate first surface and opposing distal
10 second surface wherein said proximate first surface is in releasable contact with said three dimensional surface of said flexible support and said proximate first surface have a mating inversely replicated three dimensional topography.

27. A multilayer sheet, as defined in claim 26, wherein said sheetlike structure of said flexible support is not distorted into a plurality of ridges
15 corresponding to said second layer ridges by embossing.

28. A multilayer sheet, as defined in claim 26, wherein said distal second surface of said flexible substrate is visually free from any ridge pattern corresponding to said plurality of ridges of said flexible support.

29. A multilayer sheet, as defined in claim 26, wherein said
20 substrate comprises a first adhesive layer forming a proximate first surface of said substrate.

30. A multilayer sheet, as defined in claim 29, wherein said substrate further comprises a first facestock layer in contact with said first adhesive layer and said facestock layer forms an opposing distal second
25 surface of said substrate.

31. A multilayer sheet, as defined in claim 26, wherein said distal second surface of said substrate has an additional exterior layer applied thereto.

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32. A multilayer sheet, as defined in claim 26, wherein said distal second surface of said substrate is printed with at least one image.